PURDUE EXTENSION

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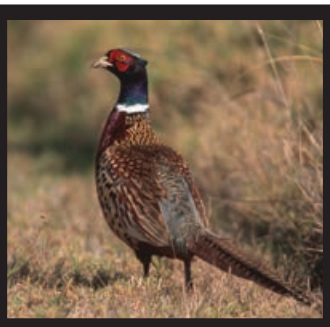
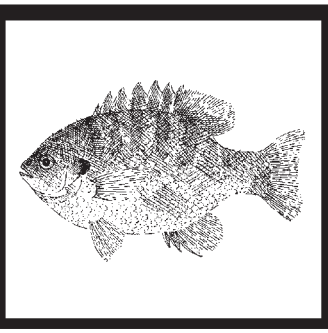
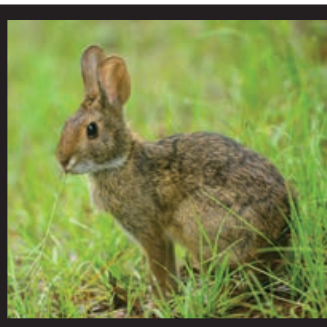
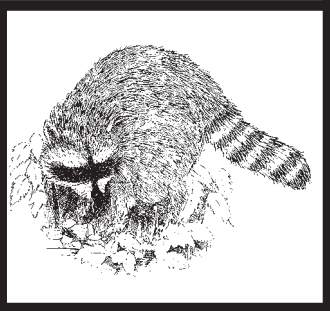
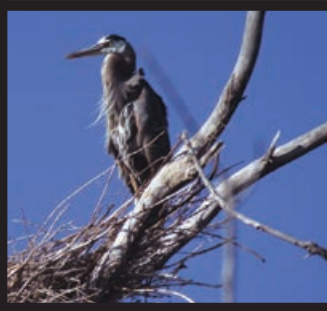
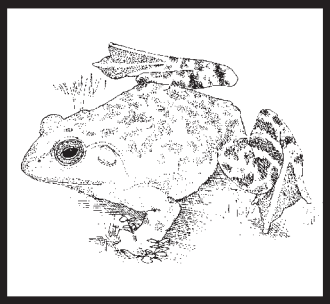
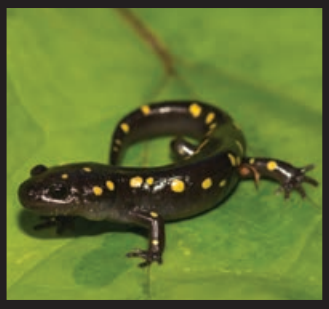
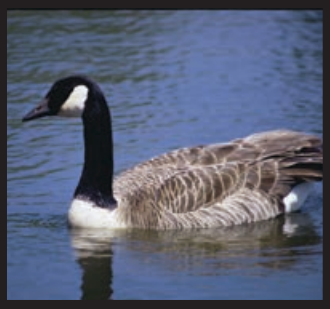
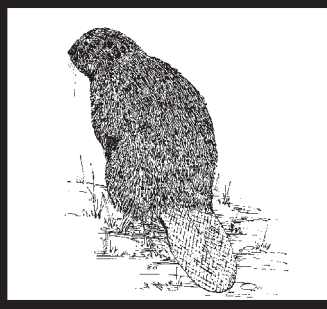
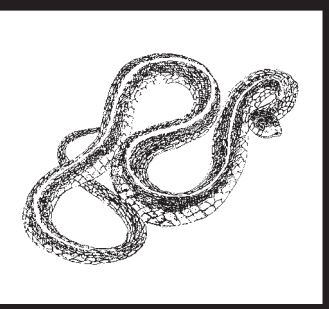
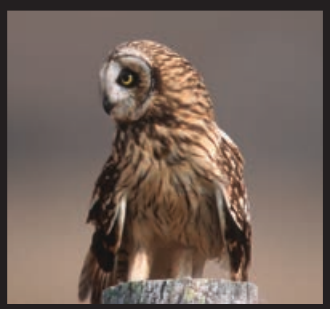





WILDLIFE SCIENCE 3

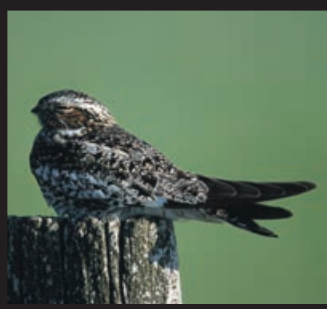


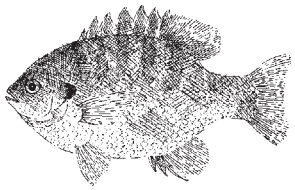







Grades 9-12





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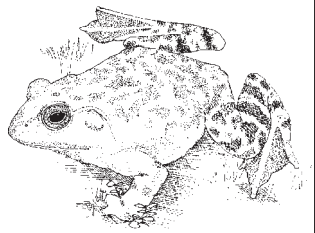


NOTE TO 4-H MEMBER

The 4-H Wildlife Science curriculum is for youth who enjoy studying wildlife. Activities in Level 3 are divided into chapters based on how you might use the information you've learned—as a homeowner, resident of a wildlife habitat, food and fiber producer (farmer), mayor, teacher, or legislator. Level 3 delves deeper into the study of wildlife. It can prepare you to be well informed and to study wildlife-related topics at a college or university.

AUTHORS

Natalie Carroll, professor, Purdue University
Theodore Leuenberger
Kathrine Leuenberger

CONTRIBUTORS

Gretchen Leuenberger, Brian Miller
Editor: Nancy Alexander, Noblesville, Indiana
Graphic Designer: Kathi Brethauer, KB Design, Indianapolis, Indiana

Words defined in the glossary are in **bold** the first time they appear in the text.

Your Wildlife Journal

Keep track of all your wildlife observations. You can organize your journal in different ways:

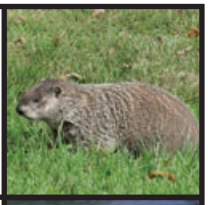
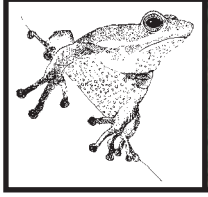
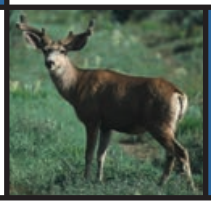
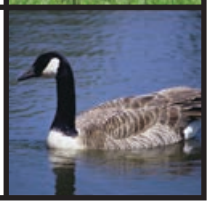
- A section for each month and year of study
- A section for each vertebrate class: mammals, birds, fish, reptiles, and amphibians
- Another method of your choosing

Discuss the Let's Chat questions with your parent, 4-H leader, or other facilitator after you have completed the activity.

CONTENTS

C1 YOU ARE A HOMEOWNER



Homeowners and renters should have a basic understanding of wildlife so they can properly and safely manage their home while enjoying the wildlife around them. Wildlife in the wrong place can cause costly damage and other problems. Activities in this chapter help you learn to study the wildlife around you, create wildlife **habitat**, and reduce possible conflicts with wildlife

STUDYING WILDLIFE HABITAT

What is the home range of vertebrates that live near you?

INTRODUCTION

Wild animals must be able to find food, shelter, and water in their **home range**. Home range is the amount of room a species typically travels to fulfill its basic needs. Wildlife biologists have researched many species to estimate the amount of room they need. The estimates are approximate and can change during food shortages, drought, and extreme weather conditions. Examples:

- Beaver: less than 6 square miles
- Cottontail rabbit: 3 to 20 acres
- Raccoon: a half-mile to 2 miles
- Red fox: 1-2 square miles
- Striped skunk: 120-150 acres


Flight allows birds access to food, water, and shelter over a larger area than other vertebrates, so wildlife biologists cite birds' range, rather than home range. Range indicates where you could expect to find a particular bird species, rather than the distance one animal may travel. Here are two examples of ranges:

- Eastern wild turkey: eastern and southwestern United States
- Red-tailed hawk: all of the United States and most of Canada

Evaluating wildlife habitat with aerial photographs

Wildlife biologists use aerial photos to evaluate habitat—what is available and what might be lacking for a particular species. An aerial photo is a plan view or view from above, which a bird or pilot would see. Many features look different in an aerial photo-

graph. For example, a silo looks like a circle, buildings look like squares or rectangles, woods are rough, and fields are smooth. In addition to observing how habitat features are arranged and their relationship to neighboring habitats, you need to apply what you know about a species' behavior and habitat requirements to judge whether a certain habitat meets the animal's needs.

All objects appear small in an aerial photo, but you can often determine what they are by observing their shape and comparing their size with the size of a known object. These guidelines will help you interpret what you see in an aerial photograph.

Guidelines for interpreting an aerial photo

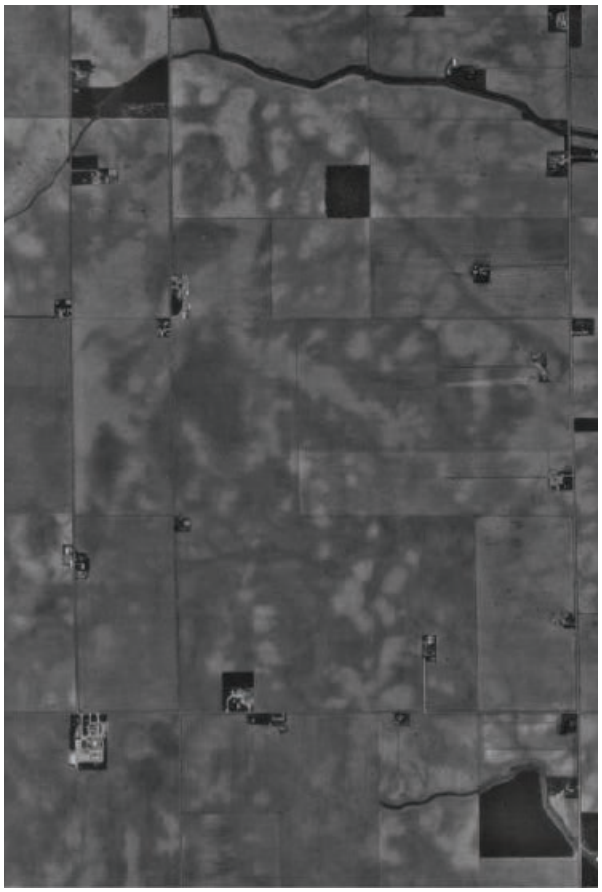
- Start by aligning the photo so any shadows fall toward you; otherwise, valleys appear as ridges and vice versa.
- Use recognition elements, or features, to help interpret what an object is. Recognition elements include:
  Shape. Fields are usually square. Streams are narrow and generally meander. Ponds are round, while reservoirs have a dam (flat side) at one end with a stream emerging from it. A long narrow feature that crosses roads and woodlands may be a power line, gas pipeline, or railroad track.
  Relative size. Rivers are wider than ditches. Roads are wider than driveways.
  Pattern. Crop fields have patterns (rows) that differ from the patterns of pastures or forage fields. A cornfield might have a coarser texture than a wheat field.
  Shadow. Helps determine shape and gives an indication of an object's size.
  Color (tone). Shades of black and gray help to distinguish conifer trees (evergreens) from deciduous trees, or one field type from another.
  Texture. A deciduous forest with large trees has a coarser texture than a young forest. A pasture with brush in it has a coarser texture than a clean pasture.
  Association of one feature to another. A series of square ponds near a large barn is probably a lagoon, not a pond.
  Site. Look where an object is located with respect to other features for additional ideas of what that object might be.
- Travel corridors—fencerows, streams, water, railroads, ditches—are often important for animals moving from one patch of habitat to another. An isolated block of habitat is not as accessible as one connected to other blocks of habitat.
- Notes for species primarily requiring various habitats
  Woodland habitat – Large, unbroken blocks of woodland are best.
  Water and edge – Habitats containing the best interspersion of these elements with the woodland blocks.
  Agricultural habitat – Good blocks of agricultural habitats with the best interspersion of other needed elements (water, edge, woods, or fencerows). A mix of field types is best for many species. They prefer smaller fields with less interior over large, square fields with interiors a long way from edge or escape cover.

LET'S DO IT

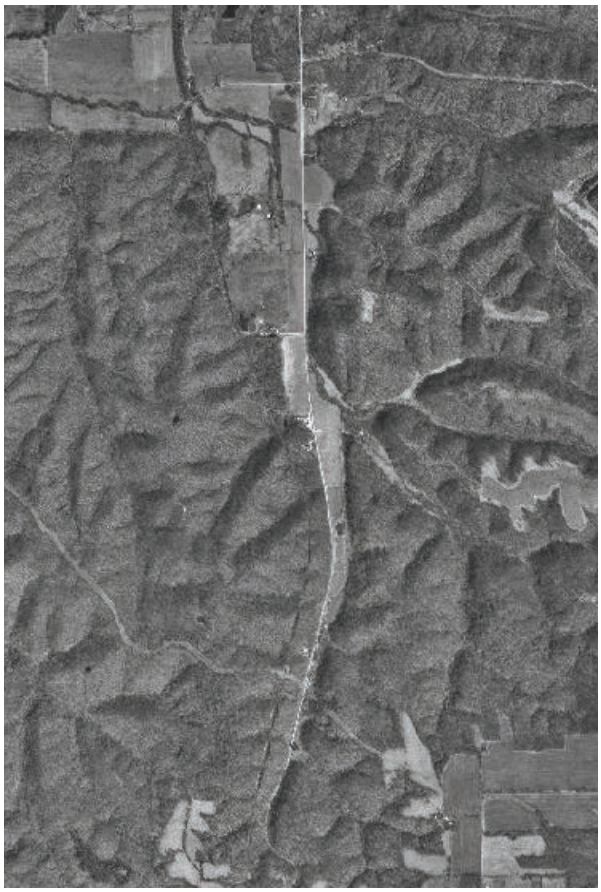
1. Study the aerial photographs.
2. List any wildlife habitat features you see in the photos.
3. Discuss each aerial photograph with your adult facilitator.

URBAN HABITAT

URBAN/RURAL INTERFACE HABITAT



PREDOMINANTLY AGRICULTURAL HABITAT



PREDOMINANTLY FORESTED HABITAT

Urban habitat features

Urban/rural interface habitat features

Predominantly agricultural habitat

Predominantly forested habitat

LET'S CHAT

Share What Happened: What did you notice first in each aerial photograph?

Apply: How does human activity impact wildlife habitat and wildlife's ability to find food, water, shelter, and space?

Generalize to Your Life: Why do human needs often come before wildlife needs?

LET'S FLY HIGHER

- Read Evaluating Habitat with Aerial Photographs at the Indiana 4-H wildlife web page, www.ydae.purdue.edu/natural_resources/4-H,NR,Projects/Projects/wildlife.
- Evaluate the habitat around your home.
  Find or sketch a map for an area of about 1 square mile (mi^2, 1 mile x 1 mile) with your house near the center of the map.
  Indicate the location of all buildings, roads, driveways, trees, woodlots, and water. You can use Google Maps (maps.google.com) to get a closer look at the area.
  Circle primary habitat: urban – rural – forested – water (including wetlands)
  List any animals you think (or know) live around you. Examples: squirrels, rabbits, deer, raccoons, skunks, fox, frogs, fish, snakes, eagles, robins, goldfinches.
  Study the habitat needs of the wildlife you listed.
- Consider the wildlife habitat under you when you fly in an airplane.

CREATING WILDLIFE HABITAT

How can you create and maintain habitat for wildlife?

INTRODUCTION

The primary goal of habitat development and management is to provide vegetation and water in a species' home range. This activity will help you become familiar with wildlife habitat needs.

Some components of a wildlife habitat require large spaces, but you can create others, especially feeders for birds, squirrels, and insects, in a garden or even on an apartment balcony. Keep safety in mind when creating wildlife habitat. Do not use pesticides, herbicides, fungicides, or fertilizers in or around it. Be particularly careful that these contaminants do not enter surface water or groundwater.

GEAR

- Wildlife Species Read and React Worksheet

LET'S DO IT

1. Read the Wildlife Species Read and React Worksheet.
2. Answer the questions for each vertebrate.

LET'S CHAT

Share What Happened: How many eastern deciduous forest successional stages can you name?

Apply: Why is vegetation important for wildlife?

Generalize to Your Life: How might you become more involved in creating habitat for wildlife?

LET'S FLY HIGHER

- Learn more, and create your own wildlife habitat. Recommended resources:
  - Junior Master Gardener, Texas A&M Extension, http://jmgkids.us/. Click on Store to find Wildlife Gardener (under Curriculum at the bottom center of the page).
  - Purdue Department of Forestry and Natural Resources websites:
    www.purdue.edu/wildlife/homeowners
    www.purdue.edu/wildlife/faq/backyard.html
  - National Wildlife Federation websites:
    Garden for Wildlife: www.nwf.org/How-to-Help/Garden-for-Wildlife.aspx
    Certify your wildlife habitat with the National Wildlife Federation (fee required), www.nwf.org/CertifiedWildlifeHabitat

- Join, or create, a 4-H or FFA Wildlife Habitat Education team, and compete in your state's Wildlife Habitat Education Career Development event. The Wildlife Habitat Education Program (WHEP) helps students understand wildlife ecology and management practices. They also gain skills in teamwork, oral and written communication, decision-making, and leadership. Ask your local Extension 4-H youth development educator for information about this educational opportunity.

The central hardwood region is home to more than 60 species of mammals, 40 species of reptiles, 130 species of birds, and 30 species of amphibians.

WILDLIFE SPECIES READ AND REACT WORKSHEET

Understanding major wildlife-management concepts and practices helps you develop and manage your wildlife habitat. Important terms are described below. Some of the descriptions use other terms in the list, which are italicized. Note that although these concepts and practices are especially important for vertebrates other than birds and larger habitat areas, they apply to all wildlife, including insects to some degree. For example, if the habitat you create is a birdfeeder or small wetland for frogs, both benefit by having trees or shrubs nearby for perching or shade.

Corridors
Corridors are areas of continuous habitat that permit animals to travel between separate regions of similar habitats. Corridors allow animals to move to areas where they can breed with other animals of the same species but from different populations. This maintains genetic diversity. Corridors also allow animals to find and use suitable habitat for feeding. They can offset the negative consequences of *fragmentation*. Streams and vegetated ravines are examples of urban-area corridors that allow wildlife to move into parks and other urban habitats. Preserving, maintaining, and creating uninterrupted corridors are important wildlife habitat-management tools. Narrow corridors of less than 100 yards wide, however, can be dangerous for many wildlife species because predators are more likely to be there.

Edge
The area between two *successional stages* or habitat types is called edge. Many species prefer a balance of edge habitats with blocks of vegetation in one successional stage. Blocks of vegetation of 10 to 40 acres provide a good balance of edge habitat (a narrow band of vegetation around the edge of the block) and unbroken sections of habitat (the interior of the block). Blocks of up to 100 acres are desirable in large forests for species that prefer interior habitats.

Fragmentation
Breaking up tracts of habitat into smaller pieces causes fragmentation. Habitat fragmentation can be caused by roads, power line rights-of-way, building lots, parking lots, subdivisions, and clearing land for agriculture. Fragmentation can leave islands of habitat that are too small for some species to survive on.

Interspersion
Interspersion refers to habitat containing different successional stages. Many wildlife species require more than one successional stage or habitat type to meet their needs for food, water, cover, and space. The habitats must be close to each other or linked by corridors to allow for safe travel. More interspersion usually supports a greater variety of wildlife.

Patch size
Patch size refers to the size of a block or parcel of habitat. Habitat patch sizes must meet species' range requirements.

Plant succession
Disturbed soil follows a certain sequence in plant cover over time until it reaches its climax (top) stage. The steps in this sequence are called *successional stages*. When the climax stage isn't disturbed, it stays stable for a long time. Humans or natural forces that disturb the soil or a wetland might set back succession, and the cycle continues forward from the new starting point. Some species of wildlife need large, unbroken areas in a particular successional stage.

The following six stages of plant succession occur in the Eastern Deciduous Forest and still-water wetlands. *Note:* These stages generally don't apply to wetlands with moving water.

Stage	Eastern Deciduous Forest	Wetlands
1	Bare ground	Deep water with little vegetation
2	Annual forbs and grasses	Shallow water dominated by submerged and floating aquatic vegetation
3	Perennial forbs and grasses	Very shallow water or wet ground dominated by any variety of emergent aquatic vegetation
4	Shrubs	Ground becomes drier and upland vegetation similar to the surrounding area becomes dominant
5	Young woodland	See *wetland succession note* directly below.
6	Woodland	

Wetland succession note: Succession proceeds slowly in wetlands with large amounts of deep water or a rocky bottom. Fluctuations in water level can cause final stages to regress to earlier stages. For example, if a wetland in stage 3 of succession is flooded with deep water for a period of time, the aquatic emergent vegetation may die, leaving the wetland back in stage 1 or 2. How much it regresses depends on the length of time the wetland is flooded with deep water, how much the water level changes, and how long the present vegetation can survive in the changed water level. Management of water levels is an important tool in managing wetlands for wildlife habitat.

Riparian buffer

A riparian buffer is an area of trees, shrubs, forbs, and grasses adjacent to streams, lakes, ponds, and wetlands. Riparian buffers are important for providing habitat and protecting water quality in streams and wetlands. The minimum recommended width is 100 feet.

READ AND REACT

American robin

Habitat information: Urban settings with large open areas and nearby trees and shrubs. Parks, golf courses, and lawns in residential areas are favorites. Requires water daily in warm seasons. Can get water from yard irrigation, rain-filled gutters, low-lying areas, ponds, etc. People can provide birdbaths and pans of water. (Do not place water in areas where cats or other pets can catch the birds.)

- Have you seen this animal? If so, where?

  _____

- How could you create or improve habitat for this animal in your area (home or county)?

  _____

Black-capped chickadee

Habitat information: Stages 4, 5, and 6 of plant succession. Usually gets enough water from snow and surface water. In summer is attracted to watering facilities such as birdbaths in urban areas.

- Have you seen this animal? If so, where?

_____

- How could you create or improve habitat for this animal in your area (home or county)?

_____

Bobcat

Habitat information: Occupies a wide variety of habitats throughout the U.S., except for some areas in the northern Midwest states with intensive agriculture; areas lacking rugged or rocky mountainous terrain; or areas with extensive bogs and swamps. Found in semi-open farmlands (stage 2 and 3), bushy areas (stage 4), and heavily wooded uplands and bottomland forests (stage 5 and 6). Although water requirements are not well documented, is known to use free-standing water. Diet may meet much of its water requirements. Nocturnal and seldom active in the daytime.

- Have you seen this animal? If so, where?

_____

- How could you create or improve habitat for this animal in your area (home or county)?

_____

Brown thrasher

Habitat information: Stages 3 and 4 of plant succession. Dense, woody vegetation associated with shrub thickets, hedgerows, shelterbelts, forest edges, riparian areas, and young forests. Water requirements are unknown.

- Have you seen this animal? If so, where?

_____

- How could you create or improve habitat for this animal in your area (home or county)?

_____

Bullfrog

Habitat information: Permanent bodies of standing or slow-moving water. Prefers shorelines with dense vegetation (stages 3 and 4 of wetland succession), adjacent to shallow open water areas (stage 2) dominated by floating and submerged aquatic vegetation. All habitat requirements are often found in and around a single pond. Needs stable water levels for hibernation and egg development.

- Have you seen this animal? If so, where?

_____

- How could you create or improve habitat for this animal in your area (home or county)?

_____

Canada goose

Habitat information (breeding habitat): Nests and rears young in or near stage 2 wetlands interspersed with some stage 3 wetlands. Wetlands containing 20 percent tall emergent aquatic vegetation and 80 percent open water are usually good habitat. Riparian areas adjacent to rivers also provide habitat.

- Have you seen this animal? If so, where?

_____

- How could you create or improve habitat for this animal in your area (home or county)?

_____

Eastern bluebird

Habitat information: Stages 2 and 3 of plant succession interspersed with stages 5 and 6 vegetation. Gets the water it needs from diet, but uses other water sources when available.

- Have you seen this animal? If so, where?

_____

- How could you create or improve habitat for this animal in your area (home or county)?

_____

Eastern cottontail

Habitat information: Stages 3 and 4 of plant succession. Ideal habitat is interspersed one-third grassland, one-third cropland, and one-third shrub cover. Also uses parks, golf courses, and stream corridors in urban areas. Gets enough water from its diet.

- Have you seen this animal? If so, where?

_____

- How could you create or improve habitat for this animal in your area (home or county)?

_____

Eastern fox squirrel

Habitat information: Stages 5 and 6 of plant succession with interspersed small openings (stages 2 and 3 of plant succession). Riparian areas are important in the Midwest. Also uses urban areas with lots of trees. Usually gets enough water from its diet but might need more water in late summer.

- Have you seen this animal? If so, where?

_____

- How could you create or improve habitat for this animal in your area (home or county)?

_____

Eastern gray squirrel

Habitat information: Deciduous woodland in stages 5 and 6 of plant succession. Usually gets enough water from its diet.

- Have you seen this animal? If so, where?

_____

- How could you create or improve habitat for this animal in your area (home or county)?

_____